**Key Concepts:**

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| * carbohydrates: monosaccharide; supplier of energy and dietary fiber; structural component of cells: cell wall, cellulose |
| * DNA: double helix, storage of genetic material |
| * inorganic, organic molecule |
| * lipids: component of cell membranes; stored energy supply |
| * minerals |
| * nucleic acids: nucleotide (sugar, phosphate, and nitrogen bases) |
| * pH |
| * proteins: organic molecule; amino acids; structural and functional role, enzymes |
| * RNA: single strand |
| * vitamins C – wound healing, K – blood clotting, D – bone growth * water: polarity, density, and solvent properties |
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Objectives: Student will be able to:

Explain the ways that the building blocks (atoms) combine to create all of the substances and structures in the universe.

Create a representation of the water molecule illustrating hydrogen bonds.

Construct a representation that shows how atoms bond together to form carbohydrates.

Use models and illustrations to compare the unique structure and function of lipids and proteins used by living things.

Formulate a scientific question to compare the relationship between stored energy and carbohydrates, lipids, and proteins.

Compare the specific roles of vitamins in the body.

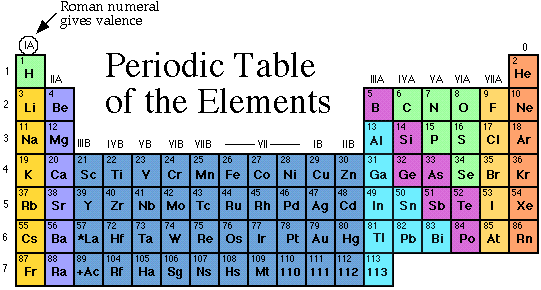
Use models and illustrations to compare the unique structure and function of nucleic acids used by living things.

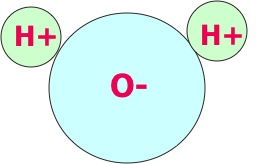
Formulate a scientific question about the relationship of pH to a factor in a living system.

Develop a testable scientific question as the beginning foundation of a research project by using prior

Develop appropriate methods for conducting an investigation (independent and dependent variables, proper controls, repeat trials, appropriate sample size, etc.).

Develop a plan to collect data to address scientific questions and support predictions.





Pertinent Information:

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| **“Big” Ideas** | Organisms use macromolecules for growth, repair and energy.  Water has unique properties because it is a polar molecule. |
| **Essential Question** | How can we apply our knowledge of macromolecules and chemical compounds to enhance our quality of life? |
| **Enduring Understanding** | Organisms use carbohydrates for energy, dietary fiber and cell structure.  Organisms use lipids/fats for long-term energy storage and cell structure.  Proteins are involved in most cellular activities. Organisms use them in growth and repair.  Vitamins and minerals are needed in small amounts for healthy living.  Water has unique properties because it is a polar molecule. |

Notes: